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Timothy Seed Production

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TIMOTHY-SEED PRODUCTION

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Domestic Seed Production

Available records indicate that nearly 6 percent of the timothy acreage of the United States is harvested for seed each year. During the 6-year period 1925–30, inclusive, timothy seed was harvested from an average of approximately 520,000 acres, on which about 2,000,000 bushels, valued at nearly $4,000,000, were produced annually.

Most of the timothy seed produced in the United States is harvested in a few States in the central West. During the years 1925–30, 42 percent was produced in Iowa, 16 in Missouri, 14 in Illinois, 11 in Ohio, and 7 in Minnesota, constituting in all 90 percent of the total production.

Weather conditions often determine the use made of the timothy crop. Sometimes excessive or frequent rainfall delays harvesting a crop intended for hay until it has become nearly or quite mature, and for this reason it is harvested for seed.

The price is also a factor. When the market for timothy seed reaches a comparatively high level and the price of hay becomes relatively low, some of the timothy acreage originally intended for hay is likely to be harvested for seed. This may result in overproduction of seed and consequent low prices.

Although the total income from an acre of timothy seed may be relatively small, the cost of production is correspondingly low. The income from a meadow used for seed production may be increased by the value of the threshed or headed hay and by pasturage during late summer and fall.

Since a surplus of timothy seed is commonly produced in the United States, the quantity imported is usually negligible.

From 1884, the earliest year for which records are available, to 1934, the quantity of timothy seed exported annually has ranged from about 2,000,000 pounds in 1888 to more than 27,000,000 pounds in 1910. In the successive 7- and 5-year periods from 1884 to 1925, an almost continuous gradual increase occurred in the average annual value of the exports of timothy seed, from $289,000 during the period 1884–90 to $1,261,000 during the period 1921–25. During the period 1926–32 the average annual value of the exports was $795,000. Most of these exports are to the Provinces of Ontario and Quebec, Canada, though much seed is also exported to Europe, largely to Great Britain, Germany, France, and the Netherlands.

The drought of 1934, however, caused a great reduction in the seed crop, according to the Bureau of Agricultural Economics, the total crop for 1934 being the smallest on record.

As a result of this short crop heavy importations have been made, totaling 4,709,500 pounds. The following figures from the record of the Division of Seed Investigations, Bureau of Plant Industry, show the quantities of timothy seed imported between July 1, 1934, and May 31, 1935, with the countries of production: Canada, 2,410,100

pounds; Finland, 655,100; Sweden, 742,500; Poland, 516,700; Latvia and Lithuania, 241,200; Germany and Czechoslovakia, 120,600; other European countries, 13,300; and Japan, 10,000 pounds.

Production of Seed of Improved Varieties

Although the same methods may be used in the production of the seed of improved varieties as in the production of ordinary timothy seed, some special precautions should be observed. When a meadow is sown with a new variety for the purpose of seed production care should be taken to sow the seed on land free from other timothy plants, and at harvest time it is well to mow at least two or three swaths around the outer border for hay so that there will be no danger of harvesting seed from plants of ordinary timothy which may be growing along adjoining fences or meadows. Precaution should be taken, also, when the seed is threshed that no seed of any other variety of timothy is in the machine to become mixed with that of the improved variety.

Timothy meadows are rarely fertilized for seed production, although yields of seed may be increased by the application of nitrogenous fertilizers. However, the use of fertilizer is not likely to be profitable except when seed of a new variety for which there is a good demand is being produced or when the seed is high in price.

Harvesting with Binders

Most of the timothy-seed crop of the United States is harvested with binders, in much the same way as wheat or oats.

The sheaves of timothy are placed in shocks. In the timothy-seed producing area of the central West, each shock usually contains from 5 to 8 sheaves, which are arranged in a more or less circular form, as shown on the title page. Sometimes the tops of the shocks are bound together, either with timothy stems or with binder twine. A less common method of shocking timothy is to place the bundles in two paired rows.

Harvesting with Headers

In some parts of the United States where timothy is grown for seed production, especially in southern Iowa, headers have been and still are used quite extensively to harvest this crop.

When a header is used, the cutter bar of the machine, which is 10 or 12 feet long, is usually set so high that many of the small late timothy heads on the shorter stems are not harvested. As the stems of sorrel, plantain, buckhorn, or certain other weeds that may be growing in the meadow are usually shorter than the timothy, it is fairly easy to avoid gathering them with the crop. Timothy-seed growers and dealers generally concede that the seed harvested with a header is of better quality than seed harvested with a binder, and a somewhat better price is often paid for it.

The heads, with parts of the stems varying from a few inches to a foot or more in length, are carried by a moving canvas and dropped into the header wagon or header barge which is driven alongside the header. Two header wagons are used. While one is being loaded, the heads are unloaded from the other in shocks resembling haycocks. The heads are left in the shock yard, usually

for a week or more, to go through a curing process. The timothy may be threshed directly from the shocks, or the heads may be hauled to stacks or ricks. If these stacks are well covered with hay or straw, the seed may be kept in them for months.

After the seed crop has been harvested, the headed hay should be mown as soon as possible, since the green leaves remaining on the plants dry rapidly.

Harvesting with Combines

In recent years in localities where combined harvesters and threshers have been used for cereal crops, these machines have also been used to some extent for harvesting timothy seed. Since the seed is threshed at the time it is harvested, it must be quite well matured. The timothy stems may be cut off relatively high, just below the heads if desired, in much the same way as with a header.

Time of Harvesting

According to records collected by the United States Department of Agriculture, the average date when the harvesting of timothy seed begins in northern Missouri, which is about the southern limit of the area of its production, is about July 21. As the season advances, harvesting progresses northward. The average date when the first seed is harvested in southern Minnesota is about August 5. In any particular locality, most of the seed is harvested within a week or 10 days after harvesting operations begin.

The largest yields of seed are obtained if the crop is harvested after most of the seed has matured but before much shattering has occurred. At that time, seed may be shattering from the extreme tips of 10 to 20 percent of the earliest heads although there will still be some immature seed on small heads growing on short stems. If, however, harvesting is delayed until these late heads mature, the seed on the larger early heads begins to shatter, and the heads may appear like the one in the middle of figure 1, or may even lose enough seed to appear like the two heads at the right of the illustration.

Threshing the Seed

Timothy must first become well dried before being stacked or threshed, or the seed may be injured as a result of heating. The threshing of timothy seed requires a considerable amount of skill on the part of the man operating the machine.

From studies made at the College of Agriculture, Edmonton, Alberta, Canada, it was concluded that timothy seed can be completely and satisfactorily threshed if the speed of the cylinder does not exceed 800 to 900 revolutions per minute and the teeth of the concaves do not come into mesh with those of the cylinder more than one-fourth of an inch. Under these conditions, hulls were removed from only 11 percent of the seeds. When the speed of the cylinder was 1,050 revolutions per minute, and the teeth of the concaves and cylinder were in mesh 1.5 inches, the proportion of hull-less seeds was increased to 34 percent.

Timothy seed is much lighter in weight than the seed of cereals. If there is a very strong current of air through the machine, a

large proportion of the timothy seed may be blown out with the straw and chaff, and the yield much reduced thereby.

If the seed is to be elevated and collected in bags from the spouts as with grain, then fine sieves must be substituted for, or placed below, those used for wheat or other cereals. If the quantity of timothy to be threshed is small, a canvas on which the seed falls may be placed under the machine. Timothy seed which may have grown as a volunteer crop in mixture with winter wheat or rye may be collected in this way.

Threshed and Headed Timothy

Threshed timothy is timothy that has been harvested for the seed crop, ordinarily with a grain binder, and from which the seed has

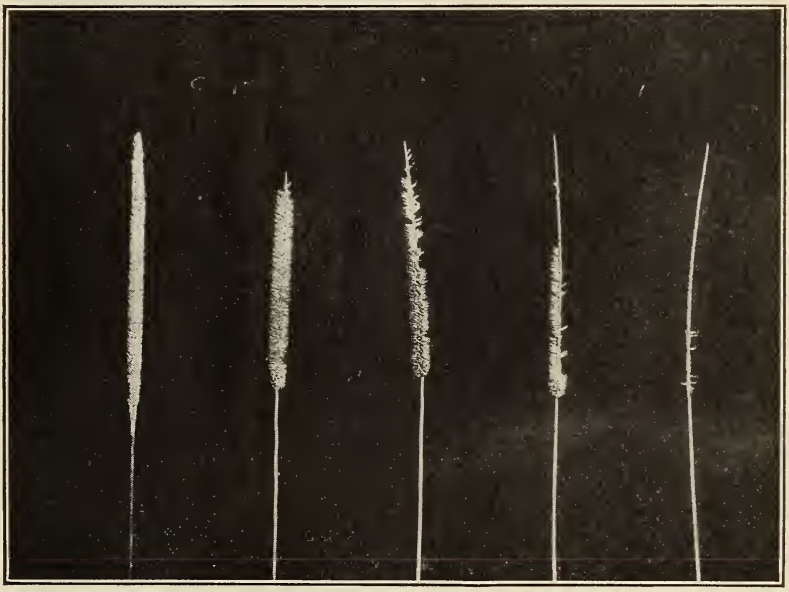

FIGURE 1.—The seeds of mature timothy which has been exposed to the weather are gradually shattered off the heads.

been threshed. The term "headed" timothy refers to timothy that has been mowed after the seed heads, together with the upper parts of the stems, have been removed either with a header or a combine. Threshed and headed timothy, both of which have a much lower feeding value than timothy harvested early for hay, are usually fed as a roughage to livestock on the farm.

Recleaning the Seed

By using some of the modern types of seed cleaners it is possible to remove most if not all of certain weed seeds which could not be separated from the timothy by means of a fanning mill. Usually the seed grower does not have expensive seed-cleaning machinery on his farm, but can avail himself of the use of a fairly efficient machine by hiring the owner of one to do the work.

In certain parts of the timothy-seed producing area, redtop grows in many of the meadows. Where large quantities of timothy with a mixture of redtop, even in small proportions, are harvested, the aggregate amount of redtop seed recleaned from it may be quite large. When timothy contains a considerable proportion of redtop, which usually commands a higher price than timothy, a premium over the price of ordinary timothy is often paid for the seed.

It is difficult completely to remove the seed of alsike clover from timothy seed. Mixing alsike with timothy, however, usually is not objectionable and may even add to the value of the seed.

Yields

The average annual yield of timothy seed in the United States, from 1925 to 1930, was 3.8 bushels per acre. Yields as high as 10 bushels per acre or more are said to have been obtained, but no accurate records of the sizes of the fields and of the yields obtained in them are available to support these statements. The more usual yield of timothy seed reported by growers varies from less than 3 bushels to 6 or 7 bushels per acre. Yields of seed, like those of hay, are usually higher when the rainfall during the spring months is normal or somewhat above normal.

Marketing

Timothy seed produced for market is usually sold within a few weeks or months, or at least within a year, after threshing. Local buyers commonly buy the seed from the farmers and resell it to wholesale dealers, or act as agents for large seed firms. Timothy seed is commonly purchased from the growers in the condition in which it comes from the threshing machine, and is known as "country run" seed. The price paid is based on the estimated or calculated percentage of clean timothy seed which it contains.

The Federal Seed Act prohibiting the movement in interstate commerce of misbranded seed applies to timothy. Most States have laws covering the purity, weed content, and germination of seed. Information as to such requirements can be had from the State departments of agriculture.

In the United States, neither Federal nor State governments have established grades of timothy seed. Some of the wholesale dealers who handle timothy have several trade brands, representing seed of different qualities; these brands, therefore, correspond in a general way with different grades of seed.

Timothy seed appears in trade either with or without hulls (figs. 2 and 3). The legal weight in nearly all States is 45 pounds per bushel. There are about 1,100,000 to 1,300,000 seeds per pound.

Germination

After timothy seed has become mature and been harvested, some time may elapse before a satisfactory percentage of it will grow. During this interval, what is known as the after-ripening process occurs. Timothy seed usually attains its maximum germinability in about 3 or 4 weeks after it is harvested, when nearly 100 percent should germinate. As the seed becomes older, the viability, or abil-

ity to grow, gradually decreases. After 2 or 3 years the percentage of germination of any particular lot of seed may fall below 85 percent. On the other hand, timothy seed sometimes retains a germination of 85 percent or more for 4 or even 5 years. Timothy seed stored in a comparatively cool and dry place retains its viability longer than if kept where the air is warm and humid.

In most lots of timothy seed some has been hulled; occasionally a large proportion is hull-less. It has been shown that within a few months after harvest the seed without hulls grows as well as

FIGURE 2.—Timothy seeds with hulls (×10).

that with hulls, but that the hulled seed loses its germinability more rapidly than the seed with hulls. The value of seed a year or two old may depend, therefore, to a considerable extent on the proportion of hulled seed present.

Impurities in Timothy Seed

There are two classes of impurities in timothy seed: (1) Inert matter, such as particles of sand or broken pieces of stems; and (2) seeds of other plants than timothy. The commonly accepted standard is 98 percent or more of pure seed. Good grades of timothy seed often have less than 1 percent of impurities.

The first group of impurities is usually of but slight importance. The importance of the second group depends upon the kinds of foreign seeds that occur.

There is a long list of weed seeds which may be present in timothy, those most commonly present being buckhorn, common plantain, curled dock, and red sorrel.

The seeds of some weeds differ so much in size from those of timothy that, even though they were growing in the timothy meadow, they are quite readily removed when the seed is recleaned. On the other hand, it is very difficult if not impossible completely to separate the seeds of some other weeds from those of timothy.

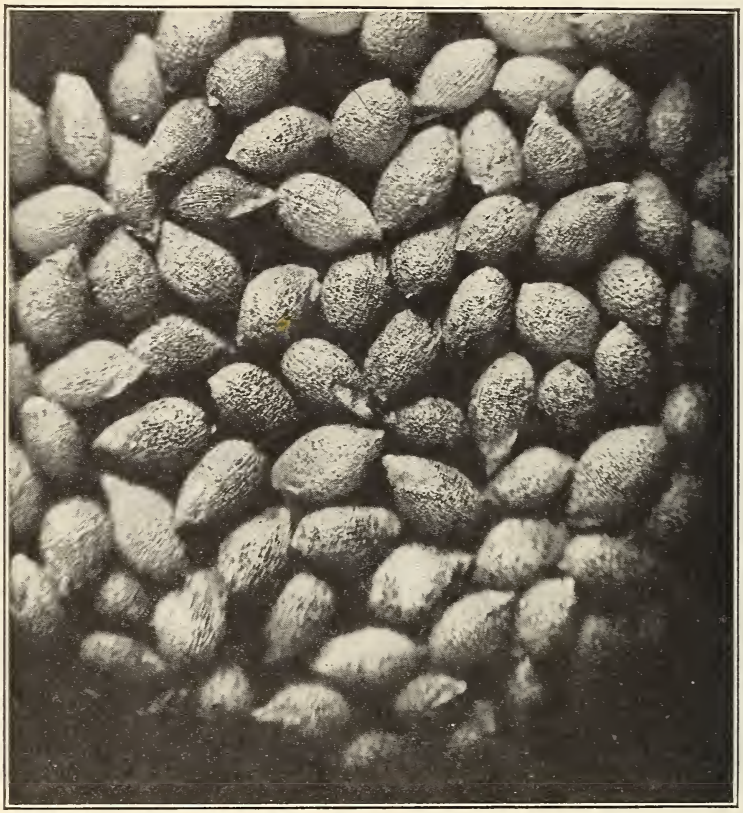

FIGURE 3.—Timothy seeds from which the hulls have been removed (×10).

The laws of the various States differ as to the presence of weed seeds in the seed of timothy or other agricultural crops. In some States there is no limitation in regard to the kinds or amount of weed seeds which timothy may contain, provided the packages are plainly labeled with a statement of the total percentage of weed seeds, and also with the names and amounts of specified noxious weeds. In other States if the seeds of certain weeds classed as noxious are present in proportions greater than the laws of these States specify, the mixture may not be offered for sale. In a few States no seeds of certain specified weeds are tolerated.

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